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ASSISTED BY

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AMERICAN VETERINARY REVIEW,

JUNE, 1879.

ORIGINAL ARTICLES.

REPORT ON THE DISEASE IN CATTLE KNOWN AS "ANTHRAX."

BY PROF. D. McEACHRAN, F.R.C.V.S.

(Continued from page 59.)

HEALTHY BLOOD.

The fluid which circulates in the tubes called blood-vessels, serving the double purpose of carrying nutriment to and removing waste material from the various organs of the body, is not, as might be supposed from mere optical inspection, a homogenous fluid, but consists of two kinds of organized particles, called corpuscles or blood globules, which float in a transparent colorless fluid called the *plasma* or *liquor sanguinis*.

The red corpuscles are by far the most numerous, and they give the fluid its characteristic red color; they are round biconcave discs, at one time supposed to be cells, but now looked upon as homogeneous masses of stroma without either nucleus or enclosing membrane. "The color is due to the presence of a peculiar coloring matter which can be separated from them without destroying them, being attached either by mere imbibition after the manner of a dyed fabric, or else by some easily disturbed chemical affinity."

This coloring matter in a healthy condition is quite absent from the liquor, but in several diseased conditions, notably that now under consideration, it leaves the globules and becomes diffused in the plasma. It can also be artificially produced by simple dilution with water, freezing and melting again, repeated electric discharges, separation of the gases of the blood, the addition of salts of the bile acids, of either chloroform or of alcohol in small quantities.*

The white corpuscles are in health few in number, about $\frac{1}{500}$ ths to $\frac{1}{350}$ ths of the red. They are very much larger than the red, and appear to be granular masses of a spherical form, containing within them nuclear bodies and granular matter. The analysis of the blood of the horse by Hoppe shows that,

In 1,000 parts of blood are contained:

Corpuscles.....	326.2
Liquor sanguinis.....	673.8
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	1,000

In 1,000 parts of corpuscles:

Water.....	565
Solids.....	435
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	1,000

In 1,000 parts of liquor sanguinis:

Water.....	908.4
Solids.....	91.6
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	1,000

The solids of the liquor sanguinis consist of:

Fibrine.....	10.1
Albumen.....	77.6
Fat.....	1.2
Extractives.....	4.0
Soluble salts.....	6.4
Insoluble salts.....	1.7
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*Jones and Sieveking.

The fibrine is the plastic material of the blood, and whatever destroys or lessens the quantity of fibrine materially reduces the consistence and viscosity of that fluid, and may render it less fit or altogether incapable of carrying on the vital functions which the blood has to perform.

Professor Toussaint, of the Toulouse Veterinary College, in concluding some inferences, deduced from some experiments conducted by him to prove the action of bacteria when injected or introduced by inoculation, says: "Inoculation and subcutaneous and intravascular injection of anthrax blood did not always give rise to generalized anthrax. An old ass resisted repeated attempts of this kind; I have also failed with dogs; and I have also not once succeeded in communicating the disease to pigs three or four months old, no matter what means were employed. But if these animals did not die of anthrax, the local lesions produced were nevertheless of the greatest interest, as they throw light upon a property possessed by the bacteridiæ which enables us to explain the inflammatory phenomena observed in various subjects. The local effects of these organisms appear to me to result from the presence of a soluble matter (diastase) secreted or excreted by the parasites, and which enjoys to a high degree, though this varies according to the species which nourish the *bacteridiæ*, phlogogenous properties." He further says, in order to ascertain more exactly the part played by the *bacteridiæ* and their *excreta*, "I had the anthrax blood filtered and injected the filtrate. This experiment only led to the production of a general inflammation altogether local. The inoculation or injection of bacteridiæ, cultivated according to Pasteur's method, has given rise to the same inflammatory phenomena as the anthrax blood produces. The difference in the two experiments was due to the fact that bacteridiæ had lived for a certain *sur place* and in becoming multiplied had produced a certain quantity of phlogogenous matter. From the results of these experiments it appears to me that along with these bacteridiæ there exists a substance endowed with intense phlogogenous properties, which should be largely taken into account in interpreting the lesions which are observed in anthrax. These experiments also demonstrated that the phlogogenous mat-

ter is more or less active according to the subjects from which the bacteridiæ are obtained. The animals which I have studied may be ranked in the following order: rabbit, guinea pig, sheep, ass, horse and dog. In this order are disposed the inflammatory lesions of anthrax and those which are developed by subcutaneous injections in the refractory animals."—(*Veterinary Journal*.)

Toussaint is not singular in supposing that the vitality of the anthrax poison is not due to the bacteria alone. Bollinger points out the existence of what he calls bacteria germs, which have also been noticed and described by Professor Siedamgrotsky of Dresden Veterinary College. He describes the anthrax bacteria as fine bodies in the form of rods, either straight or bent at obtuse angles and always motionless. Their length varies considerably. They are jointed so that their outline is irregular; each rod appears made up of segments, every one of these being short and cylindrical and about half as long as it is broad; the end cylinders only in each rod look shorter and rounder. In well developed rods the junction of these segments is not difficult to make out, and it is made more distinct after soaking them in water, as recommended by Bollinger. The bacteria germs are so small that they cannot be measured; they are round, very rarely oblong, bodies, and have no apparent independent motion. He describes them as minute ball-like forms, which swim freely about in the fluid; they are not numerous nor very conspicuous, and unless very great care is taken they are liable to be obscured by external matters introduced by coarse manipulation. Particular amœboid cells are not unfrequently met with, on the surface of which are observed by close microscopical inspection, very minute and somewhat round pointed protuberances. These are best distinguished on the surface of the cell, as on the under and upper surface it is difficult to satisfy ourselves of their existence. It is advanced that bacteria germs preferentially attach themselves to the white blood globules. This surmise will be further confirmed by the fact that now and again these globules are found to be star-shaped and furnished with fine points, the delicateness of which distinguishes them at once from the thick protoplasmic protuberances; from the appearances of these he says one is

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driven to the conclusion that they can be nothing else than young, short, anthrax bacteria, derived from the bacteria germs.

With regard to the hypothesis that the anthrax bacteria produce something which has a chemical action on the bodies of animals, the following well known fact may be adduced as evidence. When anthrax blood is inoculated in the texture of the skin, certain effects follow in the form of inflammatory swelling. This tumefaction has no relation so far as extent is concerned to the quantity of bacteria and bacteria germs; and the presence of these alone cannot account for this result, so that one may surmise the production of some chemical matter which circulates more quickly in the lymphatics of the connection tissue than the bacteria.—(*Veterinary Journal*.)

The most recent investigations on this subject are to be found in an able paper by Dr. Koch, entitled "The *Ætiology of Splenic Fever based on the history of development of *Bacillus Anthracis*.*"

Dr. Koch's paper furnishes us with the following facts: The number of bacilli found in the blood varies with the animal; in the guinea pig it was enormous, sometimes even exceeding that of the corpuscles; in the rabbit much smaller, so that sometimes several drops had to be examined before any were found; in the mouse often *nil*.

In the blood of dead animals or in other suitable fluids, the bacilli grow to very long, straight, leptothrix-like filaments (within certain limits of temperature, and with the presence of air) while the formation of numerous spores goes on at the same time.

The spores of *bacillus anthracis* under certain conditions of temperature, nutrition and presence of air, develop immediately to the bacilli, which were seen in the blood.

Dilution of the animal fluid containing bacilli with a moderate amount of water makes no evident difference, but a large quantity kills the bacilli. Dampness, then, such as that to which a body killed by splenic fever is exposed when buried to some depth or left in the fields or skinning yards, or the excreta of some sick animal are exposed, does no harm to the bacilli, while it hinders the evaporation of the nutritious fluids in which the bacillus has done its harmful work.

Let only the spores be formed, and specimens of dried bacilli will be as fatal four years after as ever they were; but the fibres will not maintain their activity for more than five weeks.

Koch thinks that the best way to rid ourselves of this "destroying angel" is to utterly destroy all substances containing bacilli, but fears that it is impossible to adopt so radical a measure; he thinks much might be done by placing all affected bodies in a dry pit to which air could not enter, and at so great a depth as to have a temperature always below 15°C . (*Quarterly Journal of Microscopical Science*.)

THE MANNER IN WHICH DEATH IS PRODUCED IN ANTHRAX.

Having thus reviewed the different investigations as to the nature of bacteria and their spores or germs, we will now briefly consider the manner in which they cause death.

Two theories are advanced, viz: that they cause death by removing from the red globules of the blood the oxygen necessary for hæmatosis. That is to say, oxygen is necessary to render the blood capable of supporting life, and in the healthy condition it is constantly being interchanged for carbonic acid, an impurity resulting from the blood's function as a sewerage system for the tissues in removing waste products. The bacteria, by using up this oxygen in the blood, produces a condition similar to what would take place were an animal inclosed in a chamber exhausted of air. Among the advocates of this theory are Pasteur, Joubert, Bouley, Bollinger and Toussaint.

Professor Toussaint, however, from recent experiments has somewhat modified this view by discovering that death is often caused by obstruction of the circulation by masses of bacteria. Bollinger (Ziemssen Vol. III, page 388), says: "By deductions from numerous experimental, chemical and anatomico-pathological results, I believe that I have adduced the proof that the action of anthrax bacteria (which are present in enormous numbers in the blood of animals suffering from apoplectiform anthrax, which is very common,) is apparently this: The bacteria, by rapid increase in the blood, by virtue of their powerful need for oxygen and their enormous chemical affinity for the same, absorb it with

great greed and in large quantities, thus taking it away from the red blood-globules. All the symptoms of the sick animals while alive—dyspnœa, cyanosis, clonic spasms, dilated pupils, finally depressed temperature, and the appearance of asphyxia—all of these symptoms, as in every case of carbonic acid poisoning, are explicable by the above detailed mechanism, which quickly results in a lack of oxygen and an excess of carbonic acid in the blood. Likewise the post-mortem examination reveals changes similar to those which we are accustomed to find after death due to lack of oxygen and overloading of the blood with carbonic acid, engorgement of the venous system, dark tarry character of the blood, slight hemorrhages in different organs, cyanotic coloring of the parenchymatous organs, hyperæmia of the lungs.

The overloading of the blood with carbonic acid is, moreover, greatly increased on account of the more rapid oxygenation that is going on, yielding a further quantity of carbonic acid as a product of combustion. In this manner I explain those lightning-like and apoplectiform cases where the animals suddenly sink to the earth and suddenly expire."

A year ago Professor Toussaint, of the Toulouse Veterinary College, discovered that in many cases death by bacteria was caused by obstruction of the circulation by masses of these rod-like bodies. On examining the mesentery, a thin transparent membrane, immediately after death, extremely important lesions were observed. "A large number of capillaries were filled with *bacteridiæ*; in many of them the vessel was so obstructed by these particles that blood corpuscles could not be seen; often even the vessels were not discoverable save by the presence of the *bacteridiæ*, which marked their course as if they had been injected. The arterioles themselves were obstructed by means of *bacteridiæ* behind which the blood corpuscles were accumulated.

An examination of other parts of the body led to the discovery of lesions of the same nature; intestinal villi were found to be injected at their summit with a mixture of blood and *bacteridiæ*. These obstructions were most observable on the lungs. He says, in isolating a layer of vessels in the lungs, he found that these rod shaped bodies literally injected and crammed these

vessels; they lay in every direction and gave the capillary network a peculiar aspect. There were very few blood corpuscles among them.

He is therefore of the opinion that these lesions are sufficient to account for death occurring and that vascular emboli are the immediate cause of death. The formation of the emboli, he says, can be seen in the living rabbit after fixing the creature and drawing a portion of the omentum from the abdominal cavity. The circulation of the blood can be observed through the membrane. In this way one may observe for an hour or more a beautiful sight which in this instance has altogether a special interest from the presence of the *bacteridiae* and the formation of the lesions just described, the process of development of which the observer can follow with ease. (*Veterinary Journal*, Vol. VI, page 421.)

SYMPTOMS.

The symptoms vary according to the form which the disease assumes.

General anthrax, apoplectiform or lightning-like anthrax, the form most commonly seen in cattle and sheep, runs its course with frightful rapidity; they often drop as if they had received a blow, go into convulsions and while the heart beats tumultuously the pulse is imperceptible or nearly so, the breathing is short, quick and difficult as if suffocating, the mucous membranes, especially of the vulva and anus, are red and swollen; muscular tremors and clonic spasms, a rapidly lowering temperature and in from ten to twenty minutes she is dead. In some cases so sudden is the death that they drop and expire as if shot. Not unfrequently they are seen apparently in good health and in a few minutes are found dead. This form of the disease is the most common and often occurs in sporadic cases, or only a few animals on a farm, and the suddenness of the death is apt to lead to the supposition that they have been poisoned. It is worthy of note too, that the best animals usually are the first to be attacked.

In some cases the disease does not run its course so rapidly. The milk secretion stops suddenly, shivering, increased superficial

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and internal temperature; a bloody or sero-sanguinous fluid escapes from the nostrils and anus or is mixed with the fæces. The symptoms above described are present but in a more chronic form, and its course may be protracted for twenty-four hours.

Bollinger describes an intermittent variety, in which irregular remissions and intermissions may be observed lasting a few hours, often six, twelve or twenty-four hours. The breathing during a paroxysm becomes labored and gasping (dyspnœa); such mucous membranes as are visible grow cyanotic; the extremities cool; the convulsions become violent; opisthotonos and convulsive contractions of the muscles of the eye are observed, so that only the white of the eye remains visible. The animal grows very weak; can no longer keep itself upon its feet; the temperature falls below the normal standard; the extremities become cold; the pupils dilated to their utmost, and death follows in the form of asphyxia, generally twenty-four, thirty-six, or forty hours after the first appearance of the symptoms.

The third form usually described as anthracoid erysipelas, also as "black quarter" or "quarter ill," differs only in there being a localization of the disease in various parts of the body; usually, however, even in this variety yellow serous exudates take place in all the connective tissues, the internal vascular organs are usually enlarged and engorged with the black tarry-looking fluid. In the form known as *black quarter*, which is not uncommon in many parts of this country, it usually occurs in young thriving stock, in which no indications are observed until the owner's attention is attracted by one or two being found dead. Most cases afford opportunities for studying the symptoms, and many even for applying treatment. In this case we have all the symptoms of septic poisoning, dilated pupils, dullness, the head being carried low, muzzle dry, pulse quick, temperature high, 105° to 107° , stiffness or inability to move; he may be found supporting himself against the fence or lying down with the head thrown back to the flank unable to rise; local swellings are found in different parts, such as the quarter, back, neck or sub-thorax; the swelling at first is hot and tender, but it soon becomes cold, the skin and hair over the part feel dry and

harsh ; gases are generated under the skin, giving the swelling a crackling feeling when rubbed. The appetite and rumination cease ; the symptoms rapidly become aggravated, the temperature rapidly falls, coldness of the surface and extremities, shivering, weakness, difficult suffocating breathing, and an imperceptible pulse, all betoken approaching dissolution, and ere long with fixed and staring eye, unable to rise, he becomes convulsive and dies in a state of coma.

POST MORTEM EXAMINATION.

There is a marked tendency to decomposition, the body is usually very much distended from gas, crackling swellings from gasses under the skin are found in numerous parts of the body.

On removing the skin a considerable escape of black, tarry-looking blood takes place from the engorged cutaneous vessels, which stains the whole surface of the body, giving the skin an unusually bloody appearance.

All the connective tissues are infiltrated by a citron-colored serosity. The whole muscular system is pale and soft, except the heart, in the muscular structures of which large collections of thick black, putrid blood are found. The spleen in most cases is very much engorged, its parenchyma is black, soft and friable, its covering membrane studded with purple or violet colored spots. The lungs are engorged, black and crepitating. The abdominal and pleural cavities usually contain a quantity of colored serum. The liver is very soft and nearly bloodless, of a pale yellow color resembling boiled liver. The kidneys in some cases in a similar condition, and in others engorged and of a walnut color.

In the local form we may have all these post-mortem appearances, and in addition the discolored gangrenous anthrax tumors in the quarters or other parts of the body.

TREATMENT.

From what has been said of this disease it will readily be conceived that treatment will be doubtful in its results, and in

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most cases useless. Chief among the remedies provided are chlorate of potash, turpentine, carbolic acid, blood-letting, saline preparations, and locally—hot fomentations, stimulant embrocations and setons.

PREVENTION.

This is of far more importance to those for whom this paper is intended than medical treatment. It will be seen from the remarks on the causes of this disease that our knowledge on that subject is far from accurate, yet sufficient is known of the circumstances which favor the development and spread of the anthrax poison to enable us to suggest measures for its prevention which, if carried out, will be effectual.

The carcasses of all animals dying of this disease should be immediately carried (not dragged along the ground and through the fields), to the nearest convenient place, away from any pasture field, in a dry place, or at least one which is not a source of water supply. If possible they should be burned, a process in Canada usually easily accomplished by placing them in the midst of a pile of brush which is to be burned in clearing the land, where it is not situated in land to be used as pasture. Care must be taken however that even the ashes are buried, for such is the vitality of the spores that even the process of burning cannot always be depended upon for their destruction. Of no less importance is the destruction by burning and burial of all fluids or excrement, blood, hair, hoofs, horns, hides, &c. Although in France and some other countries where anthrax commonly prevails, knackers under certain restrictions and on the adoption of certain precautions are allowed to skin the bodies and boil the carcasses for oil, yet so many accidents arise to persons engaged in this work that its practice is not recommendable. Where it is intended to skin them, the person undertaking it should be very careful that he has not any scratches or broken surface on his skin; rubber gloves should always be worn when handling them.

It has been invariably found that where deep careful burial,

away from the pasture fields, of the dead animals, with drainage and improvement of the land by a better system of cultivation has been practiced, the mortality from anthrax has been lessened enormously, and in many instances, even in what have long been anthrax districts, it has almost disappeared.

Happily in Canada we know this disease only as an occasional occurrence, usually confined to one farm in a neighborhood; such, no doubt, was once the case in the districts of Russia, Hanover, France, and other continental countries where the animal loss is now counted by hundreds of thousands. We have it now in our power, by adopting proper means, to cause its disappearance altogether, whereas neglect of such measures will unquestionably lead in time to its becoming a source of very serious loss annually to the country.

It has also been found that when an outbreak of the disease does occur, the removal of the animals to another farm five or six miles distant will be attended by cessation of the disease. In adopting this plan, great care must be exercised to prevent them coming in contact with neighboring stocks, by allowing them on the journey, to go into fields among other stock. Precaution should also be taken to prevent them meeting other animals on the road thither. Any carelessness in this respect should render the owner of the diseased animals liable for any loss entailed by others as a result of such carelessness.

The woodwork of the barn or sheds in which they have been kept should be removed and burned, the heavier structures being scraped, well washed and scrubbed, and freely white-washed with lime and carbolic acid. The food should be carefully scrutinized, all smut, rust or other form of fungi should be carefully separated, and nothing but good wholesome food and water given them.

In addition to the separation of the healthy from the sick animals, it is advisable to administer carbolic acid in doses of two drachms in gruel night and morning; give also acidulated drinks, say a drachm of sulphuric acid in half a pailful of water to each of them for a few days.

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handling or cutting up of the bodies should not have anything to do with the attending or feeding of the healthy ones.

I have the honor to be, Sir,

Your obedient servant,

D. McEACHRAN, F.R.C.V.S.

The Honorable

The Minister of Agriculture,
Ottawa.

THE THERMOMETRY IN CONTAGIOUS PLEURO-PNEUMONIA,

BY ED. DELE.*

The inquiries which I have the honor of presenting to the Academy of Medicine of Belgium, were made *exclusively* upon cattle, in a physiological as well as a pathological condition, specially concerning the exudative contagious pleuro-pneumonia which prevails amongst the dairies of our large cities.

The thermometer that I have used was a mercury centigrade instrument, measuring from 2° to $+5^{\circ}$, 0.47 centimeters long, and each degree divided by $\frac{1}{10}$, each corresponding to a little less than one millimeter.

In cattle, it is by the introduction of the instrument in the rectum that the temperature is best taken; this is easy; it is sufficient to prevent the animal from moving, which is readily obtained by scratching the animal on one side of the tail while that organ is raised.

I have remarked, in the *Veterinary Journal*, that the use of the thermometer is a part of the examination of English veterinarians who apply for appointment of inspectors of ports.

Physiological temperature of cattle.—I do not pretend to be the first who has noticed the normal temperature of cattle; as

* Translated from the *Annales de Medicine Veterinaire* Brussels, by A. Liantard, M.D., V.S.

proof of this, I may mention the writings of Dr. Krabbe of Copenhagen, which I have already published.

Before mentioning the results of his own experiments, Dr. Krabbe indicates those obtained by Hunter, $37^{\circ}5$, by Sanderson, $37^{\circ}9$ to $39^{\circ}2$, by Fleming, $38^{\circ}5$ to $39^{\circ}3$, by Davy, $38^{\circ}9$; then he adds that out of 446 observations, taken on 24 animals, he had obtained an average of $38^{\circ}8$.

From the observations that I made, I came to the conclusion that the extreme variations of temperature were between $37^{\circ}5$ and $38^{\circ}9$, in average $38^{\circ}2$.

Temperature in diseases.—I believe, if not in error, that Prof. Gamgee was the first to notice the elevation of the temperature of cattle in rinderpest, in 1865. After him, Doctor Burdon Sanderson, of England, in 1866, and Gerlach, of Germany, 1867, corroborated his observations, and Stockfleth, of Denmark, noticed also the conditions of temperature in foot and mouth disease.

The Belgian government, having learned of the works of Doctor Sanderson, requested me to ascertain their correctness, when the rinderpest existed in Belgium in 1865 and following years. My observations, entirely agreeing with those of Prof. Gamgee, were reported to our government.

Veterinary journals, at different times, reported similar experiments. For instance, the *Annales de Médecine Veterinaire* of Belgium contain an analysis, made by Mr. Ch. Siegen, of an article by M. Schmelz, treating of the temperature in different diseases of animals. For Schmelz the normal heat is $29^{\circ}5$ (Reaumur). In resuming his observations, taken on horses, he concludes "that each diminution in the temperature is a favorable sign in the course of acute diseases, even when the other symptoms remain stationary."

M. Schmelz only observed on the horse; as far as it concerns pleuro-pneumonia of cattle, I cannot agree with him. Indeed, the figures that I have obtained, have proved to me that though the internal temperature of the body of animals thus affected may diminish, the ordinary symptoms of the disease may become aggravated.

Another number of the *Annales* contains the analysis of a report made by M. Peters, of Mecklenburgh, upon the variations of the internal temperature of domestic animals, and upon the mode of appreciation of these variations. But the interesting experiments of Peters were made only on diseases of horses and in variola of sheep.

Concerning *contagious pleuro-pneumonia*, the treatises upon the temperature are more recent. In the annual reports of the Veterinary Department of the Privy Council of England, for 1873 and 1874, Prof. Brown mention the subject extensively.

It is *perhaps* unknown, that, in Great Britain, the *slaughter*, in case of *pleuro-pneumonia*, is *obligatory* since September, 1878; but *certainly* it is unknown that in Belgium this measure is carried according to the diagnosis of the inspectors of the local authorities; and that amongst those inspectors, 1678 in number in 1873, 22 per cent. only are veterinarians, 59 per cent. belong to the police, and the remaining have no professional knowledge. It is *especially* to the ignorance of these inspectors that the English report of 1873 attributes the failure of the obligatory slaughtering. The disease must be well marked for these functionaries to condemn the animal. I claim that the knowledge of the experienced veterinarians are necessary to determine if an animal is *palpably affected*. I have mentioned cases where some of my colleagues, as well as myself, have made errors and taken pneumonia for pleuro-pneumonia, but I will return to this point in time.

The report of 1873 states that when pleuro-pneumonia is recognized by the inspectors in one or two animals amongst a herd of cattle, it is certain that the disease is to be recognized amongst the others only by the rising in the temperature of the body of the animal.

To find *slaughtering* efficacious, according to the report, infected animals must be separated from the moment the temperature rises to or above 103° Fahr. without any apparent cause.

But this condition of the internal temperature of the body amongst domestic animals cannot be left in the hands of a

police officer, nor to any other agent, who, like him, is entirely ignorant of any veterinary knowledge.

The English report of 1874, taking into consideration the results obtained by the chief inspector, with *isolation*, in cases of pleuro-pneumonia, sent to local English authorities a circular giving the regulations to carry on the *slaughtering and isolation*.

Here is a resume of this circular :

Notwithstanding Art. 3, of the circular of 1873, on animals, prescribing the obligatory slaughtering of pneumonic animals, the *privy council*, attributing in great part the continuation of the prevailing pleuro-pneumonia to the delay of the slaughtering and to the neglect of execution of Art. 19 of the law of 1871, are of opinion that the disease would be efficaciously stopped by other dispositions, if executed in the following manner :

1st. Cattle affected with pleuro-pneumonia must be killed in the shortest time possible.

2d. The internal temperature of each animal, which has been exposed to the contagion, must be observed, and the herd divided in two separated lots :

The lot A will include animals whose temperature will rise above 103° Far. These will be destroyed in the shortest time, if positive symptoms of pleuro-pneumonia become manifest.

The lot B will include the balance of the herd. Those animals will be examined with the thermometer every week, and transferred to lot A if their temperature rises above 103° Far.

At last, Mr. Fleming, in his last work on sanitary science, in the article on pleuro-pneumonia, tells us that animals, whose temperature reaches 100° but not less than 102° Far. are *suspicious*, while those giving a record of 102° to 103° are diseased.

In the presence of these affirmative data, I have decided to verify myself what degree of usefulness practically can be obtained by thermometrical observations. Those which I have made, though limited, I report. In cities, where one is not daily called upon to visit diseased cows ; rather than to call a veterinarian, they are sent to the slaughter-houses and thence to the meat market.

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EDITORIAL.

COMPARATIVE PATHOLOGY.

Ever since we have been engaged in the practice of our profession in America and have observed the standard and prospect of veterinary art in America, we became convinced that one of the most powerful means by which veterinary science could be raised from the low rank in which it was held, was through the medical profession, and to it we have always looked for friendly assistance and help. Personally we have had many proofs that we were right, and that every physician in good standing and of education was willing to tender the veterinarian the hand of friendship and of professional recognition.

Our impression was founded on the fact that while we were merely specialists we considered our specialty as a branch of the immense medical sciences included under the title of comparative pathology.

It is true that the progress has been slow, and probably too slow for our earnest anticipations and desire—but see, at last how right we were.

The serious appearance of pleuro-pneumonia in cattle, the wide extent of hog cholera, the prevalence of trichina in hogs, the investigations carried and new discoveries made in France on anthrax, the presence of glanders and farcy amongst many horses in our large cities, the recent publication of the transmissibility of diphtheria in fowls to other animal species; all these are facts of comparative medicine which the medical man of education cannot and does not ignore. And then we see our medical papers, the *Medical Record* of May 3d, the *Medical and Surgical Reporter* of May 17th, giving place in their columns to editorials on the subject of comparative pathology.

These we consider as good omens and signs of the future for the veterinary profession. Let our physicians become more acquainted with the diseases of animals, let them forget the horse doctor, the cow leech, the impostor horse-curer, and recognize the

veterinarian of education, and then we will see a new era take place, not only in the veterinary, but also in the medical profession.

For the realization of this idea we would suggest, besides the formation of chairs of comparative pathology in our medical schools, the opening to our medical societies of membership to worthy veterinarians. As reported in the *Medical Record*, the medical scientific bodies of Europe count amongst their members and their officers, veterinary surgeons: Bouley, Chauveau, Reynal and many others are found in the ranks of the Academy of Medicine in Paris, Thiernesse, Edele and others belong to the Academy of Medicine of Bruxelles. Why should the Academy of Medicine of New York be less generous, and why should it not have, like its sister societies, a veterinary bureau for the essential investigation of veterinary subjects for the common benefit of a common science—comparative pathology.

While we thank our editorial brethren of New York and Philadelphia for their earnest movement in this important subject, we hope that they will not rest on their single effort, and that they will continue to keep before the medical profession at large the powerful link which unites these two branches of medical science. If human anatomy, physiology, therapeutics and surgery even owe so much to investigations on the lower animals, there is no doubt that pathology studied also in a comparative manner can be most scientifically beneficial.

PROFESSIONAL COURTESY.

It appears that in some of our numbers, articles have appeared from the pen of one of our correspondents, which seem to have carried amongst our English friends, and especially with our most eminent and friendly colleague, the editor of the *Veterinary Journal*, an idea of unprofessional language towards our transatlantic brethren. Knowing as we do the high esteem held by the author of those articles towards Mr. Fleming, we feel certain that though the style of the writing may have appeared out of place, there never was, on his part, the slightest de-

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sire to overleap the boundaries of professional courtesy, and we are positive that he will be the first to acknowledge the fact and try in the future to correct the impression thus carried, and so gentlemanly complained of in the letter the editor of the *Veterinary Journal* sends to us for publication in this number of the REVIEW.

NOTICE.

We would remind our friends, whose subscriptions have expired, to notify us of their desire to renew the same, and take this occasion to assure them of our sincere thanks for the continuation of their patronage and of their friendly support towards the REVIEW.

PLEURO-PNEUMONIA.

REPORT OF THE CATTLE COMMISSIONERS OF MASSACHUSETTS RELATING TO PLEURO-PNEUMONIA IN 1861.

(See page 73.)

COMMONWEALTH OF MASSACHUSETTS.

To the Senate and House of Representatives of the Commonwealth of Massachusetts:

In accordance with the law of 1860, relating to contagious diseases among cattle, the following report is respectfully submitted:

April 20th. Charles P. Preston, of Danvers, and E. F. Thayer, of (West) Newton, were appointed to fill vacancies existing in the Board of Cattle Commissioners.

The Commissioners have been called to visit nineteen towns, and to examine the cattle of thirty different herds during the past eight months. In six only was the disease called pleuro-pneumonia found to exist, viz: in one herd in the towns respectively of Lincoln, Ashby and Boxborough, in two herds in Lexington, and in the herd belonging to the City of Boston at Deer Island.

A herd of cattle belonging to John P. Reed, of Lexington, had been isolated, by order of the selectmen, and a few days before May 1st was discharged by them from further isolation. The cattle were carefully examined, and no disease was found to exist among them.

The Commissioners were also notified that there were sick cattle at the barn of Martin Beatty in Lexington. On examination, an ox (the mate had been killed by order of the selectmen) and a cow with diseased lungs were found. Isolation of the whole herd was continued until June 16th, when, in company with the recently appointed Commissioner, F. D. Lincoln, Esq., of Brimfield, the herd was again examined. No evidence of disease was apparent, excepting in the two above mentioned, both of which were diseased to an extent that would not justify the return of the animals to the owners. Accordingly, both were slaughtered. The autopsy of the ox showed that the lower portion of the right lung adherent to the ribs, a diseased mass of lung tissue, was encysted and floating in pus. In the cow, the left lung was diseased; otherwise, the condition was similar to that of the ox.

From the history of the cases, and the pathological appearance, it was evident that the disease in both animals was of long standing, and as no other cases occurred, the remainder of the herd was released from further isolation.

On the 10th of May the Commissioners received a notice from the selectmen of Lincoln that the disease existed in the herd of George Nelson, and that the animals were kept isolated by their order.

Two cows had died, one on the 17th of March, the other on the 4th of May; several others had been sick, and were much emaciated. Generous diet was ordered and isolation continued. On the 27th, one of the cows, being greatly emaciated and evidently much diseased, was killed. A considerable mass of disease was found in the right lung; the formation of pus had commenced. The herd was kept isolated until August 3d, when three were selected as having diseased lungs, and a fourth did not thrive. It was decided to have the four slaughtered. The autopsies justified the decision in the *three*; the *fourth* was healthy.

June 3d. The Commissioners visited the farm of Levi Smith in Ashby. One of a pair of oxen purchased in Marlow, N. H., and kept in the Box Tavern stable in Stoddard, on the night of the 24th of March was found sick, the right lung being extensively diseased. The autopsy disclosed the right lung wholly consolidated, and weighing by estimate, at least twenty-five pounds.

Mr. Smith was confident that his herd would not take the disease, as the ox was removed soon after the sickness commenced.

On the 2d of July nearly every animal was sick. Two were selected for experiment; the remainder were slaughtered on the 3d of August, and all but one were diseased.

July 15th. At Boxborough the Commissioners found two cows isolated by order of the selectmen, one of which showed symptoms of lung disease; the remainder of the herd had been turned to pasture, consequently were not in fit condition for examination.

On the 29th, on examination, all were found healthy, excepting the one sick at the former visit, which had died and been buried several days. The body was exhumed, and the right lung was found to be diseased with contagious pleuro-pneumonia, so called.

Early in May, the Commissioners were requested to examine the herd of T. E. Cutter, in Lexington. Upon examination, all appeared healthy. The owner being absent at the time, no information could be elicited. In June, it

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being again intimated that a disease existed among his cattle, another examination took place, by appointment, July 1st. Several chronic cases were found, and it was ordered that the herd be isolated. Mr. Cutter stated that he had already lost eleven head of cattle, the first one dying in March, and there being no case of sickness for several weeks, it was hoped the remainder would escape; but on the 21st one of the most severe cases was found; in fact the animal could not long survive. It was then decided to have the herd slaughtered. On examination, eight were diseased and five were healthy.

The Commissioners were next called to examine a herd of cattle at Deer Island, belonging to the city of Boston. Five had been killed by the order of the directors of the institution there, before the appraisal of the herd was made. It consisted of forty-one head, many of them valuable. Eleven heavy oxen being among the number, seven were selected for experiment; thirty-four were slaughtered, seventeen proved healthy, and seventeen diseased. Thirteen hundred and thirty-eight dollars and fifty-three cents (\$1,338.53) was realized from the sale of the beef, etc., of the healthy animals, and applied in part payment of the appraised value of the cattle.

The conclusions to which the Commissioners have arrived from their investigations the past year, are that if a herd of cattle is *surely* exposed by being in contact with an animal in the early stage of the disease (as for instance, in an ordinary barn, as cattle are usually tied up), slaughtering the herd and selling the healthy for beef is the most *economical* mode of treating it; but if the exposure is doubtful, isolation, with careful watching, should be resorted to. Facts, with the figures to substantiate the above, can be produced, but it is thought unnecessary.

It is often asked, "Why kill the diseased? Why not let them recover?"

In answer, it is proper, first, to explain what recovery of the disease called pleuro pneumonia is.

To illustrate: suppose with one-half or two-thirds of one lung solidified, the first effort of nature is to throw around the diseased mass a covering of fibrinous material, entirely shutting off the healthy tissue from the diseased, which is generally accomplished in from fifteen to forty days. Suppuration then commences on the surface of the diseased mass, which continues until the whole is liquified; absorption is constantly going on, and in from six to twenty months the animal recovers, but with the loss of a portion of the *vital organ*. If the animal is a working bullock, its value is destroyed; if a cow in milk, after the acute stage is passed, the secretion is partly restored, and the milk consumed by the people.

Would an intelligent and conscientious physician recommend for a wet nurse a person with an abscess or abscesses in the lungs? If not, why is it not equally wrong to use the milk drawn from cows with lungs in the same or a similar condition?

Contagion.—In the first three herds to which the Commissioners were called, it is not probable that contact with diseased animals could be proved. Several months had elapsed since the disease broke out, and as it was in a locality where it was well known that the disease existed the year previous, it is not strange that the efforts made to trace it failed. The statements made to the Commissioners in relation to the outbreak and spread of the disease in and from Ashby are so conclusive that it seems proper to put them in this report.

The pair of oxen kept at the Box Tavern stable over night on the 24th of March, as before stated, were driven to the farm of Levi Smith, in Ashby. Eighty-six days after, one of the herd of Mr. Smith was attacked. A bull belonging to another party was kept at the farm at the time the ox was taken sick. A few days after the owner sold him, and he was driven to Sharon, N. H., where, after exposing two herds, he died, as did several animals so exposed in those herds. Much has been said about the disease being generated by bad ventilation. Unless the mountain pastures in New Hampshire, the hills of Ashby, the large, clean barns (the doors of which had not been shut for months before the disease broke out) and the hills and valleys of Deer Island require better ventilation, the theory that the disease is caused by bad ventilation must be abandoned.

The Commissioners visited New Hampshire to learn if the reports were true that the disease had broken out in the pastures of that State. On arrival at Peterborough, information was received that a board of Cattle Commissioners had been appointed by the Governor and Council, and that Albert G. Scott, Esq., a resident of that town was a member, who stated that the reports were too true, and much alarm existed among the farmers of that section. On the following day, by invitation of the New Hampshire Commissioners, several herds were examined in Hancock and Peterborough. Two animals were selected and slaughtered. The autopsies proved that it was the same disease as in Massachusetts. An arrangement was made with the New Hampshire Commissioners that no cattle affected with pleuro-pneumonia should be allowed to go to Massachusetts, or that cattle which had been exposed in pastures where the disease had existed, or in adjoining pastures, should not be transported otherwise than by railroad, and on arrival in this State to be sold for beef, thereby protecting the farmers on the line of road usually traveled in both States, and preventing the spread of the disease in the localities where the cattle were owned.

Much credit is due the New Hampshire Commissioners for their energetic and faithful co-operation in the endeavor to prevent the spread of the disease in their own State, and in enforcing such rules as would tend to keep it from endangering the herds of neighboring States.

Indeed, it appeared to the Commissioners that far less apathy in relation to a matter so serious and vital prevailed in New Hampshire than in many portions of our own State. It is easy for newspaper writers to hold up any subject to ridicule, and for careless and unobservant persons to sneer at what they do not understand; but it remains, nevertheless, true that no one has seriously and candidly examined into the character of this disease, no matter what their preconceived notions and opinions, who have not been forced to confess that no measures for its eradication or its prevention should be left untried, or any care or attention intermitted that may possibly arrest this scourge to farmers, and this fountain of disease to our people.

By order of the honorable Council, the Commissioners were "requested to cause such cattle as may be infected, or which have been exposed to infection, with pleuro-pneumonia, to be isolated to determine the question of the contagiousness and curability of the disease; also, whether for the purpose of working, milking or breeding they have been injured, and to what extent they have been injured by exposure to disease, or by having had the disease; and also to ascertain, by slaughtering them at a sufficiently remote period, whether, and to what extent, their fattening qualities have been injured."

As the experiments instituted are not concluded, the result will appear in a future report.

The amount of bills audited, exclusive of the various sums to which the several towns are liable, is thirty-eight hundred and seventy-five dollars and ten cents (\$3,875.10), and by estimate, it will require twenty-five hundred dollars to pay the outstanding bills, making the total sum expended nearly six thousand four hundred dollars, (\$6,400).

Respectfully submitted.

E. F. THAYER,
CHAS. P. PRESTON,
Commissioners.

MINORITY REPORT.

To the Senate and House of Representatives :—

GENTLEMEN,—Having received the appointment as Commissioner on Contagious Diseases of Cattle, and not being able to subscribe to the Report which the Board of Commissioners have seen fit to present, I beg leave to submit the following as a minority report :—

All must admit the importance of arriving at a correct conclusion in relation to the disease existing among the cattle of the New England States, known as pleuro-pneumonia. For if what is so generally said by those who have had the better opportunity to examine the subject be true, viz., that the future value of the neat stock in this country depends upon the vigilance used to check the spread of the disease by the destruction of the cattle having the disease, or having been exposed to the same, it is certainly difficult to calculate the importance of vigilant action in this direction. If, on the other hand, it be true that all that is necessary is to use the care and precaution used in the treatment of other diseases, then the course which has been thus far pursued by this Commonwealth can be viewed in no other light than that of an unwarrantable waste of property, which, if followed, may involve the loss of many millions of dollars.

I suppose it not far from a just estimate to put the amount expended by the State, and the loss suffered by individuals to the present time at two hundred thousand dollars, (\$200,000;) and when or where this expenditure is to cease, no prudent man will venture an opinion. Two years ago the Commissioners announced that they were happy to be able to say that no case then existed in the State that they were aware of, and the public were led to believe that they were finally relieved of the terrible scourge; and yet there have been since that time more than a hundred cases! Had the present Board been called upon to make their Report two months since, I doubt not they would have been happy in trying to quiet the fears of any of the timid. All at once there breaks out on Deer Island, in one of the better herds, if not the best one in the State, as bad a case as has come under their observation during the season.

Believing that a just conclusion as to the proper course to be pursued can only be arrived at by a careful consideration of the facts bearing on the following questions, viz: Is the disease contagious? if so, to what extent? Is it curable? To what extent is it fatal? Are the animals affected with the disease worth keeping through a common course of it, either for fattening, milking, breeding, or working purposes? I present the following as all the facts I have been able to obtain!

The first case I was called upon to visit was that of a herd belonging to Martin Beatty, of Lexington, containing thirteen or fourteen head, made up of cows and young cattle. This herd had been isolated some time previous by the order of the selectmen. The Commissioners had continued the isolation, and had, previous to my meeting with them, agreed to kill one cow belonging to Mr. Beatty, and an ox which had been kept for some time in the barn with the diseased cow, owned by Carroll and Nevils. Both of these animals had been in low condition, but for two weeks or more had gained in flesh rapidly. An examination proved that each had what is called contagious pleuro-pneumonia. That they would have fattened readily was believed on all hands, and their improvement for the two weeks previous to their being killed seemed to warrant that conclusion. Where either of these got the disease, we could not learn. The cow was kept with the rest of the herd, (thirteen, I think, in number,) till some days after she showed that she had the disease, probably till after the time it is generally supposed those affected with contagious pleuro-pneumonia will communicate it to others, and yet no one of the herd with which she was kept had the disease that we are aware of; and perhaps it is proper to state that we kept the remainder of the herd isolated for some time, and Dr. Thayer made a number of examinations before we thought it prudent to take off the restriction.

The herd of Levi Smith of Ashby was the next I visited, from which any facts were elicited than bear upon the questions under consideration. Smith had a herd consisting of eight cows, two bulls, and a calf. There had been kept a pair of oxen belonging to one Willard with this stock, which oxen were purchased in Marlow, N. H., and were kept one night at the Box Tavern with some other cattle which were supposed to have pleuro-pneumonia. I say supposed because no evidence came before us that any one who had any knowledge of the disease had ever examined them, and had it not been for the breaking out of the disease in Smith's herd probably none would have suspected the cattle at the Box Tavern. Some forty days after the above supposed exposure, one of these oxen was taken sick. Dr. Thayer and Mr. Preston had the yoke appraised, killed the sick one and found that he had pleuro-pneumonia. The other ox was taken to Brighton, where he afterwards died, but an examination showed to Dr. Thayer's satisfaction, that he had never had the above-named disease. Some two weeks after the ox was killed, the Commissioners were called to Mr. Smith's again and found one of the cows quite sick. We had the whole herd appraised, killed the sick cow, (she had pleuro-pneumonia,) ordered Mr. Smith to isolate his herd by building a double fence on the side of his pasture where other herds were kept. One of Smith's bulls had been with the cows of Mr. Asa Walker till it showed symptoms of the disease, coughing and the like, and the Board directed these cows to be kept isolated. On the fourth of July two of Smith's cows were brought to Newtonville to be placed with four cows brought from Maine to try the effects of an exposure; both these cows were killed on the thirteenth of July and found to have had pleuro-pneumonia. Of the experiment I shall speak hereafter. The remainder of Smith's herd was killed in August; all except one cow and the calf were diseased. What this herd would have been worth to have kept it of course would be presumptuous to say, for there was no pains taken with the milking; the calf which was nearly three months old went with, and of course drew his milk from, as many of them and at such times as inclination led him thereto. Smith considered

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the milk of no value except to feed the swine upon, and the cows were from all these reasons used in such a manner as would have ruined any cows for the season. It should be noted that the calf both before and after being killed had the appearance of having been perfectly healthy; also that the neighbor's cows that were exposed to Smith's bull, six and probably nine in number, have never shown any signs of the disease; and further, that a bull that was kept at Smith's place for some time after the ox was taken sick, is said to have died in about ten days after being taken away, having given the disease to each of the herds with which he came in contact in Sharon, N. H. What reliance is to be placed on this story is for others to decide; I record it as it was told. Smith says in relation to this bull that he never came in contact with the sick ox, nor with any other of the sick cattle of his herd. It is conceded that no one of the above-named herd would have died of the disease except the ox first taken and the cow that was killed on the 23d of June, nor was it thought by Dr. Thayer that she would have died but for the presence of a quantity of masticated grass found in the bronchial tubes.

This is the only case to which we have been called where we were able to trace even a probable connection between the disease found, and any other herd. It is for others to judge how conclusive the evidence in this case is.

George Nelson, of Lincoln, had a herd of about twelve head, which were isolated by the selectmen, and turned over by them to the care of the Commissioners. Two of the cows had died, and one was sick at the time Dr. Thayer and Mr. Preston first visited the place. By their order the herd was appraised, and kept isolated; the sick cow was killed, and found to have had the pleuro-pneumonia. Dr. Thayer visited the herd several times, and examined it carefully. On the 29th of June the Board, by his advice, returned to Mr. Nelson all his herd but three cows; but on a subsequent visit it was decided to take one other cow with these three, and have them slaughtered in Brighton. Three of these cows showed the effects of diseased lungs, the other was perfectly sound; in one, the lung on one side was nearly wasted, there being not more than one-third of its proper size left, and that a hard lump adhering firmly to the ribs. I do not hesitate to say that had either of these animals belonged to me, and had been fat, I should have used the meat for food, without apprehending any injurious effects therefrom. So I think most of the farmers of this Commonwealth would have done. That they would have fattened readily, all the testimony that has come before us goes to prove; indeed, much of it is to the effect that cattle after passing the acute stage of the disease, fatten more readily for having had it.

I deem it proper to take more particular notice of Nelson's herd, because I have so often heard it mentioned as furnishing evidence sufficient to prove that cows affected with pleuro-pneumonia are not worth keeping for milking purposes. The facts in the case are simply these: From the time the Commissioners took possession of Nelson's cows till they were returned to him, and the four cows killed, he took care of them for the State, charging for his trouble and whatever it cost to feed them, on grass, hay, and meal, giving the State credit for what so much of the milk as was deemed fit to sell brought; and the result was that the cost of keeping was much more than was realized from the sale of the milk. Now, without going into an argument as to whether herds of cows would generally if kept in this manner, pay for their keeping, leaving out of the

account the value of the manure, it is sufficient in this case to state the facts that Nelson said, repeatedly, that the cows, for some reason, gave but little milk; that he could see no difference in them in this respect. Dr. Thayer examined them again and again, and could detect no trace of the disease in but four, and in one of these he detected it where it did not exist. To state the case in a different form: three of the nine cows, (I think there were nine left after killing the first one,) had pleuro-pneumonia. None of them paid for their keeping; *ergo*, cows that have the pleuro-pneumonia are not worth keeping! So easily do men become the dupes of their own prejudices! To such ridiculous shifts as these are men driven who have a theory to maintain which they deem of vital importance! It may be said that perhaps the remainder of the herd had the disease; but one of them, at least, did not have it, and the evidence is, that no difference existed among the herd as to the falling off in the milk.

Not a little excitement existed in Lexington in regard to a herd belonging to T. E. Cutter, from which several cows had died during the spring and summer. The Commissioners had the herd isolated, and at a subsequent visit one of the cows was found to be very sick. It was thought best to have the whole herd, consisting of thirteen cows and a bull, appraised and killed at Brighton, where the meat of the healthy portion could be readily disposed of. All but four of the number proved to have had the disease. The only facts I deem it worth recording here in relation to Cutter's herd are, that Cutter declared that neither of the cattle killed at Brighton had ever shown to him any symptoms of the disease, though he had watched them closely, and had had that experience which having the disease in his herd six or eight months would give; and that he did not mention as a fact that the cows did not pay for their keeping, but on the contrary, complained of the loss he should suffer by being deprived of the milk of so good a herd. Let it be borne in mind, that eight of this herd had had the pleuro-pneumonia for months.

July 15th we visited the herd of Oliver Meade, of Boxborough, consisting of two cows and some dozen young cattle. Meade had lost two cows, and the selectmen had compelled him to shut up in his barn the remaining two. On inquiry it was found that one of these cows and a two-year old had been purchased of his brother, who lived about a mile distant, which brother sometimes traded with Lexington people, and during the past season had lost an animal of some disease. These were deemed suspicious facts, and the cow bought of the brother, though appearing to the inexperienced to be perfectly healthy, and the one by her side which was evidently diseased, were condemned. The young cattle were taken from the pasture and kept in a stable for two weeks, that Dr. Thayer might have a good opportunity to examine them; and that other herds might not be exposed previous to such an examination. On our visiting the place, two weeks afterward, one of the cows was dead. The young cattle were examined thoroughly, particularly the one bought of the brother, and also the remaining cow. The doctor thought she must have the disease in the chronic stage, being positive that she had a slight adhesion on one side, and there seemed to be no other way to trace the disease, as none of the young cattle had ever shown any symptoms of the disorder, and they had been kept all winter in the barn, with the one bought of the brother. The three cows which Meade had owned for years, were dead. The lungs of one of them Dr. Thayer had examined, and there could be no mistake about its having had the contagious pleuro-pneumonia.

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The remaining cow must, as he thought, be the dragon that brought the trouble into the family; and though she stood a perfect picture of innocence and health, was condemned. But, alas for science! her lungs proved to be as clean as her countenance, and we poor mortals were again afloat as to the evidence. To make the matter still worse, it was found on hearing all the testimony in regard to the brother's animal, that something else than pleuro-pneumonia must have been the trouble with it. To relieve us from the terrible dilemma, the veterinary surgeon of Boxborough suggested that Mr. Meade lived on a road over which cattle were sometimes driven on their way to and from New Hampshire, and what more probable than that some of them might have had the disease, and stopped long enough at Meade's barnyard to have left it! The *great mystery* was solved, and we left! Let it be borne in mind that there was no evidence that the disease called pleuro-pneumonia had ever existed in any other herd than Meade's, kept in the neighborhood of Boxborough; that Meade's cows, beyond a question, had the contagious form of the disease; that he, or his neighbors, raised his whole herd, except the two animals before mentioned, and they were free from the disease; and it will be seen at once that it was necessary to adopt the theory of the old negro, the veterinary surgeon referred to, or some similar one, or the doctrine of the exclusive contagiousness of the disease must be abandoned.

On the tenth of November, just as we were settling into the belief that we had effectually checked the spread of the disease, not having had a fresh case for three months, Dr. Thayer decided that the herd belonging to the city of Boston kept on Deer Island, was seriously affected with pleuro-pneumonia. The Board was called to confer with the Directors of the House of Industry in relation to the matter. After a consultation in which it was suggested by some of the Directors, and, as I thought, generally assented to by their Board, that Deer Island was just the place to try experiments as to the disease, it was agreed on our part with Mr. Payson, with whom the city authorities had left the whole matter, so far as they were concerned, that on the Tuesday following (this was on Saturday,) the Commissioners would go to Deer Island, have the herd appraised, Dr. Thayer would examine it carefully, and the State should take that part of it in which he should find any evidence of the disease existing, and the city should hold the remainder.

Mr. Payson was to keep the whole stock without food from Monday night till we should arrive on Tuesday, that the doctor might have the better opportunity to detect any trace of disease. From some cause, never satisfactorily explained, I found on arriving on Deer Island on the day agreed upon, that the programme had been entirely changed, and the Commissioners had agreed, without consulting me in relation to the matter, to take the whole herd, and have it slaughtered, unless Mr. Payson should see fit to select some of it to keep, it being understood that should such part of the stock as he might select thereafter have the pleuro-pneumonia, the State should pay the city the amount at which they were appraised. Against this arrangement I felt it my duty to protest, because I deemed it a matter of great importance to the Commonwealth that the question should be fairly tested, whether cattle affected with this disease are worth keeping. We had been requested by the Governor and Council to test, as best we could, this and other points. Up to this time we had labored under difficulties which here would be entirely overcome;—such as finding suitable

persons to take care of, and places to keep such cattle in, without exposure to others. Here was a herd of valuable cattle, cows valued by Mr. Payson at from eighty to one hundred and fifty dollars. Certainly if any animals were worth keeping through a siege of the disease these were. Perhaps on no other farm in this State is there that precise care taken of stock, so as to be able to tell the profit or loss attending it; no one could here complain of the danger of exposure to other herds, this being the only one on the island. In short, if there be a place in this Commonwealth where such an experiment can be carried on successfully, it would seem that Deer Island is that place; or if there be any cattle worth thus experimenting with, such stock as they had there is that stock. It had been found that in many cases where cattle were killed, the effects of the disease were so slight that no one would pronounce the beef unhealthy for food. Mr. Payson had killed an ox of this herd that Dr. Thayer, as a physician, had advised him to use. I proposed that if this herd must all be slaughtered, the stock appearing to be healthy be held by Mr. Payson, so that should there be any such cases as referred to, the State might not lose their whole appraisal; the Commissioners having previously decided that the law did not allow them to dispose of the beef when the slightest trace of the disease was found. But this proposition was rejected. In a single day's slaughtering were found two oxen appraised at two hundred and forty-seven dollars and fifty cents, (\$247.50,) and would have brought more than two hundred dollars in market; which both my associates decided they should not hesitate to eat or give to their families, but which we could not sell. The herd was slaughtered, with the exception of four cows, two yearlings and a calf; and these were saved, not, as the report of the Commissioners might lead one to conclude, for them to try an experiment with, but because Mr. Payson would rather run the risk of their having the disease than to suffer the loss he would, if he accepted the appraisal. Fourteen of the thirty-five slaughtered by the Commissioners were more or less diseased; two of them would probably have died.

Up to this time not the slightest evidence has been found that the disease was brought to the island from other herds; and yet several of the daily papers of Boston published articles calculated, if not intended, to lead the public to believe that the disease had been traced to a yoke of oxen bought of a man in New Hampshire, who, four years ago, sent the disease to Quincy. It is true that the lungs appearing to have been longest affected were taken from a yoke of oxen Mr. Payson bought last May of a man bearing the same family name of him who it is said sold the cattle which caused the trouble at Quincy in 1861. But it is also true that the oxen bought by Mr. Payson had stood in the same stable, eaten at the same rack, drank at the same trough, worked in the same field, and been with through the entire summer, three or four other yoke of oxen, all of which were killed, and no trace of the disease found. It is also true that they had never been with any other cattle of the diseased herd, were kept in a barn separated from them by a distance of several rods, and the only possible exposure there could have been for them was in that all drank at the same trough, but never at the same time. It is also true that Mr. Payson had worked these oxen through the entire season without having had the least idea of their having been diseased. He says that some time during the summer one of the oxen did not thrive as well as he thought he ought to have done, and he ordered a little more grain to be put into his food. These facts are worth noticing, as

tending to show the value of such cattle for work. Still, again, it is true that the butcher employed on this farm says that he killed an animal from this herd more than a year ago whose lungs were affected in precisely the same way that those were which the Commissioners decided had the pleuro-pneumonia. But his story was not believed. Ah no! for it ran counter to the popular theory in regard to the disease. The tale of any old gossip, nay, even the "heard tell" which dame Rumor so generally employs, is sufficient to prove that the cattle at the Box Tavern were the means of giving the disease to Smith's herd. But here, a man who says he examined the lung carefully, and certainly had perception enough, if ever he had seen *one* good case of pleuro-pneumonia, to know another case, is doubted. The old lady could not be made to believe her son's story of the wonders of the sea, though told with moderation; but when he told her of the great gold chariot-wheel which they fished out of the Red Sea, stamped with Pharaoh's name, she could believe, because she had read in the Scripture about its being lost there. There is still another fact in relation to the Deer Island stock worthy of notice, viz: seven of the ten cows killed by the Commissioners, and found diseased, had passed from the acute to the chronic stage of the disease without Mr. Payson's notice, either by the falling off in their milk, or in any other way; a fact which carries additional weight when we remember that Mr. Payson is not one of those "guess so" farmers, but one who takes just pride in pointing out each cow in his herd, and referring to his memoranda, states the exact amount of milk she gave in any given month, and the butter made therefrom. One may well ask how can it be that cows affected with pleuro-pneumonia are worthless for milk, when such a man had it in his herd for months, and never dreamed but that he had a healthy herd?

My associates, in their report, mention the fact that an experiment is in progress to test certain points in reference to the effect of pleuro-pneumonia in cows, and without giving any particulars in relation to the progress of the experiment, intimated that at some future day all the facts shall be made known. It seems to me proper that the facts thus far developed should be reported, and I shall therefore venture to give such as have come to my knowledge.

About the first of July two cows were brought from Smith's herd, in Ashby, to Newtonville, and placed in a barn which had been previously selected as a suitable place to try the experiment. To all appearances this barn is in a healthy locality, and unless the confinement to which the cows were subjected be objected to, I cannot see why it was not a good place for the trial. On the eighth of the same month four cows were brought from Maine, and immediately after their arrival, while in that state of exhaustion which the journey would produce, one of them was tied in a stall between the two sick cows for twenty-four hours. Each of the Maine cows were similarly exposed. The two cows brought from Ashby were then killed, and found to have been diseased with contagious pleuro-pneumonia. The lungs of one were but slightly affected, but the other had a large portion of one lung diseased. No other animal of Smith's herd, except one cow, was as badly affected, the lung on one side weighing twelve pounds, on the other a little over two pounds. In about forty days Dr. Thayer decided that one of the exposed cows had the disease, and expressed an opinion that two others would have it. Two other veterinary surgeons were quite confident that three of the four cows had an adhesion, but Dr. Thayer has

never given it as his opinion that more than one has had pleuro-pneumonia.

Owing partly to an indisposition on the part of a majority of the Commissioners, and partly to a difficulty to find a suitable place, no more cows were exposed till the fourteenth. After the cow at Newtonville was taken sick, she was carried to Weston and exposed for several days to two cows brought from Upton, and after the exposure taken back to Newtonville. Neither of the Upton cows had shown any symptoms of the malady up to the time the disease was discovered on Deer Island, (nearly three months) and it was thought best to expose them to an animal from that herd. Accordingly, Dr. Thayer selected an animal which he pronounced perfect for the purpose, had it carried to Newton and exposed the cows there to his satisfaction, when the animal was killed and found to have had the disease in its worst form. It is supposed that there has not been sufficient time since the last exposure to indicate the effect.*

To sum up the result, we have exposed in the manner I have stated six cows; only one has had the disease. Three of them have had the double exposure of having two cows affected with the disease tied on either side of them for twenty-four hours, in such a manner as to make it certain that they should inhale the breath of the sick ones, eat the food that the sick one had breathed upon, and also of being kept in the stable with one diseased cow through the whole course of her sickness, with the exception of two or three days. In about twenty days from the time the cow brought from Maine was taken sick, Dr. Thayer told me she gave about the same quantity of milk that she did before her sickness, which certainly was a little singular, as every farmer knows that if, from any cause, a cow falls off in her milk for any considerable number of days it is not often she comes up to the same mark without a change in the feed, and there was no change in this case.

Such are all the facts bearing upon the points named in the first part of this report which I have been able to gather. Meagre, I know them to be; so meagre that he must be a rash man who would attempt to build any theory thereon. It would seem to me that they rather tend to a disbelief in the present popular theory in regard to the disease than to furnish the material to build a new one. But I do not feel that I am wholly at fault that they are comparatively so unimportant; more than once have I proposed that we call to our aid some man of acknowledged medical skill and scientific ability. But all such propositions have ever met with disapproval. It certainly is consistent in him who has no faith in medicine to refuse to call a physician, and equally so in him who believes he knows as much as any one, to ask advice of others.

I do not hesitate to say then that the experiment at Newtonville has proved of comparatively little value. My associates have no faith in the use of medicine for the disease, and still more, they think that he who is not already satisfied that the only proper treatment of a herd affected is to have it immediately slaughtered, is not worthy of the pains it would require to convince him. Men having such views cannot be expected to carry on an experiment with that interest necessary to elicit the truth; nor can it be expected that farmers who

* Since writing the foregoing, I learn from Dr. Thayer that the "Upton cows" were exposed to the animal from Deer Island for two weeks, it having been tied between them during the whole of that time. Sixty days have passed since, and neither of the cows has shown any evidence of having had the disease, unless a slight cough in one of them may be considered such. Forty-five days is the extent of time fixed upon as the time of incubation.

have their herds appraised at what three disinterested men swear is a fair market value, will make much effort to prove they are worth keeping, when they know that a majority of those who are to judge between them and the State consider it worse than useless.

It is asserted, and I suppose generally believed, that the disease has no parallel in the human or brute creation. I have said that the proposition to take counsel of experienced medical men had met with no favor with the Board. The only testimony I have therefore on this point is the opinion of one who has had no little experience, and in whose judgment I have that confidence which leads me to trust my own and the life of my family to his skill, who gave it as his opinion on an examination of one of the more thoroughly diseased lungs we have taken from any animal, that there was nothing about it that he should not expect to find in an acute case of the lung fever. Let no one suppose that I offer this opinion thinking it of much value; for I do not even consider, what is so often and triumphantly referred to, the opinions of Tom, Dick and Harry across the water, worth considering for one moment, when we can for a tithe of the money which has been expended by the Commissioners in a single year, by properly conducted experiments, place all the questions of interest in relation to this disease, and its effects, forever beyond the need of an opinion. It is not many years since the whole medical faculty of the old world stood aghast at the virulence of a disease which to-day is but little feared by skilful medical men, either there or here. Nor is it long since he would have been set down as a simpleton who would venture the opinion that any one of many of the diseases not now classed among contagious disorders was other than purely so. If it be proved that pleuro-pneumonia never appeared in this country until Chenery brought it from abroad, it does not follow that it is not now an epidemic. Nor does it follow, by any means, that because the veterinary surgeons of this country have found no remedy for the disease, therefore it cannot be cured, and that, too, so readily as to make it the part of folly to slaughter every herd in which it appears. Certain it is to my mind that not twenty, nay, not even a hundred thousand dollars will drive the disease from this State if expended in the manner it has heretofore been.

Many times have I been warned against doing anything which might jeopardize the farming interest of this State, or the health of the people. I am a farmer, and what is more, one who believes that whatever affects their welfare is of vital importance to the Commonwealth; nor would I say one word which I believe could possibly endanger the health of one of the humblest of our citizens. But I can but think it necessary that the whole truth in regard to this disease be brought to light. I do not deem it proper to enter into an argument as to the best course to be followed in relation to the disorder, but simply to give you the facts as they have come before me, trusting that the Legislature would search out any defects that may exist in the present statutes bearing upon this case, and apply the remedy. Let me suggest that if the present system of slaughter is to be continued, that the law be so amended as to enable the Commissioners to sell for meat such beef as they may deem perfectly healthy for food.

I annex hereunto a copy of each of the orders passed by the Governor's Council, intended as it would seem to be a guide in some degree for our action. There can be no possible doubt but that the course therein indicated could be

carried out with perfect safety to the community. Nor can I for a moment question whether a series of experiments, if made by men competent to make the same, would ultimately be the means of saving a vast amount of property to the Commonwealth. Certain is it that the public would then have the satisfaction of *knowing* what had better be done, instead of groping where, at best, all is mere conjecture.

F. D. LINCOLN.

Brimfield, January 7, 1865.

COMMONWEALTH OF MASSACHUSETTS.

COUNCIL CHAMBER,
Boston, April 20, 1864. }

Ordered, That the Cattle Commissioners, appointed under Chapter 28, Acts of 1862, be requested to cause such cattle as may be infected, or which have been exposed to infection with pleuro-pneumonia, to be isolated in accordance with the provisions of the Acts of 1860, Chapters 220, 221, in order that satisfactory experiments may be tried to determine the question of the contagiousness and curability of the disease called pleuro-pneumonia.

Order adopted April 21, 1864.

OLIVER WARNER, Secretary.

SECRETARY'S DEPARTMENT, December 17, 1864.

A true copy. Attest.

OLIVER WARNER,
Secretary of the Commonwealth.

COMMONWEALTH OF MASSACHUSETTS.

EXECUTIVE DEPARTMENT,
Boston, December 22, 1864. }

Ordered, That the Commissioners on Contagious Diseases of Cattle be directed to place the cattle which have been exposed to diseased cattle, under the order of Council of April 20th, referred to in a communication from said Commissioners of 9th instant, or which may be hereafter so exposed, under the same treatment as farmers' cattle ordinarily receive on a well-conducted farm in Massachusetts, in order that it may be ascertained whether, for purposes of working, milking or breeding, they have been injured, and to what extent they have been injured by exposure to the disease, etc., or by having had the disease; and also to ascertain, by slaughtering them at a sufficiently remote period, whether, and to what extent, their fattening qualities have been injured.

December 22, 1864, order adopted.

OLIVER WARNER, Secretary.

A true copy. Attest.

OLIVER WARNER,
Secretary of the Commonwealth.

REPORTS OF CASES.

DISEASES EXISTING IN HORSES, WITHOUT MANIFEST SYMPTOMS.

By R. WOOD, V.S., LOWELL, MASS.

(Continued from page 429, Vol. 2.)

Case 4.—Gray mare, ten years of age, used in a provision wagon; had been used by the same parties about four years, and always considered healthy. On this day she was used in carryall to church; on returning at noon she was allowed to roll on the grass near the stable, but after rolling, was unable to rise, became delirious, and died about three o'clock, P.M. The autopsy revealed several ulcerative spots, half an inch in diameter, at the base of cerebellum, also clots of blood. The immediate cause of death was apoplexy.

Upon inquiry, I learned that this mare, for months previous, had often, while waiting in front of the store, apparently gone to sleep resting the weight of her head on the bridle, the owner attributing the apparent sleep to weariness, she being in every other way in perfect health, and able to work hard. The brain was shown to our eminent surgeon, Dr. Gilman Kimball, who remarked, that had he not seen the specimen, he could not have believed that such an amount of disease could have existed and the animal be able to labor daily, without exhibiting symptoms which were positive of diseased condition of the brain.

CASES OF RUPTURED LIVER.

Case 5.—Large bay team horse, 12 years of age, was employed at this time to draw logs out of the canal; during the afternoon had accidentally slipped and fallen on one of the logs; on rising, he, for a few moments, seemed hurt, but continued to work an hour or two more. On reaching the stable, manifested symptoms of pain. My attention being called, my brother, then

on a visit to me, accompanied me. We found our patient uneasy, moving back and forth in his stall, would lie down, but could not lie but a few moments at a time, pulse depressed and slow, respiration somewhat quick, and occasionally sighing, visible membranes pale. Diagnosis, internal hemorrhage, ruptured liver probable. The horse died during the night. Autopsy, on the following morning, proved diagnosis correct. The largest lobe of the liver ruptured, without rupture of its capsule, which accounts for the animal living so many hours after the injury, yet the liver was unusually large, and much disintegrated, and had evidently been diseased for some time.

Case 6.—A beautiful bay horse, ten years old, used in a provision wagon; had been to our city "poor farm," to deliver goods, and on returning from the street to the highway, just as he reached the corner, in a playful manner, started quickly, and after going a few rods, fell into the road and was dead in a few moments. An autopsy revealed rupture of the liver and its capsule to great extent, the liver of a pale ash color, softened and easily broken between the fingers. The owners had refused an offer of three hundred dollars for him only a few months before, believing him to be perfect in health in all respects.

Case 7.—Bay mare, aged—; had been used in a livery stable for six or seven years, and had always been to all appearances healthy, and a great worker. On returning to the stable one evening, she was observed to appear very tired, hanging her head low and refusing to eat. A remedy, much more popular at that time (20 years ago) than now, of gin and molasses was given. Appearing on the next morning about the same, my attention was called to her. I found her much depressed, weak, pulse hardly detectible, respiration slow, extremities cold, and visible membranes extremely pale and bloodless, so much so I diagnosed the case as one of internal hemorrhage, ruptured liver probably. The mare lived about forty-eight hours, and fell dead. Autopsy revealed rupture of the liver, without the capsule, but this was distended to its utmost capacity. As in the former case, the hemorrhage was slower in consequence of the capsule remaining intact.

CORRESPONDENCE.

To the Editor of the American Veterinary Review :

Dear Mr. Editor and esteemed colleague.—At not very infrequent intervals, there have appeared articles in your interesting periodical, in which, in one part or another, indulgence in strong language and undeserved disparagement, either towards myself personally, or the Journal which I edit, is manifested. I have hesitated to notice these attacks hitherto, trusting to the sense of fairness which I know your readers to possess, and also hoping that your editorial influence would be invoked in my behalf, or, at least in that of your contemporary, the *Veterinary Journal*. But as these vituperations and unfounded assertions are continued, and appear to have become a permanent feature in certain communications, I think it is high time to notice them, and to ask for your exercise of the editorial privilege. In the *Review* for April, just at hand, there is a paper, at page 12, with a heading in German, and which is a kind of translation from that language; and one of the early sentences, serving to introduce the subject, contains the statement that “about all the matter of any scientific value in the *Veterinary Journal*, Britain’s leading review, is purloined from continental workers.” Now, whatever meaning the word *purloin* may bear in Germany or the United States of America, we, in this country, understand it to signify *theft* or *dishonesty*. If such be the meaning the writer of the articles in question intended to convey, I have no course open but to repudiate, in the most forcible terms I can find, such an unwarranted charge. I indignantly deny that any article which has appeared in the *Veterinary Journal* has, to my knowledge, been *purloined*. It is true that translations of papers which have been published in foreign periodicals sometimes appear in that journal, and I trust in comprehensible and undefiled English. But I am not aware that they are claimed as original communications, or that any attempt is made to *steal* the credit of them from their authors. The *Veterinary Journal* may not contain as extremely scientific and

abstruse papers as some of the German journals—that is its misfortune, not its fault; but I feel that I may claim for it honesty and good intentions, and a desire to promote veterinary knowledge. It has no need to purloin, neither has it the intention to act dishonestly. We, in this miserable, unenlightened country of ours, do not pretend to be what we are not, nor do we venture to compare ourselves in some things with the Berlin professors, though we think ourselves quite equal in other respects, and these the most valuable, after all. But we are sufficiently honest and patriotic to confess our shortcomings, and at the same time to deny ourselves the questionable gratification of running ourselves down—as a nation—in order that we may unduly land aliens, simply because we, personally, have chosen to be educated by them. There are good and scientific, as well as honest veterinarians in other countries than Germany; and there is no need to be unjust or to say untruthful things, in order that German teachers, and an individual who has borrowed some of their scientific notions, may thereby be glorified. It is, to say the least of it, bad taste which, it is to be hoped, time and fuller experience will remedy. In the meantime I will look to you, sir, in exercising your editorial functions, to correct expressions which you will now know to be offensive, as well as unwarrantable, until the remedy arrives.

Believe me to be, Sir, yours most sincerely,

The Editor of the *Veterinary Journal*.

London, April 30, 1879.

249 WASHINGTON ST., }
JERSEY CITY, May 10th, 1879. }

Editors American Veterinary Review:

GENTS.—Perhaps the following may be of some interest to your readers. I saw this day, in company with Dr. Miller, a cow belonging to Mr. Michael Torpey of Hoboken, height fifteen hands, weight about fifteen hundred, five years old. She was a twin calf from an imported Alderney bull and a full blood

Ayrshire cow. Her sister, larger than herself, was killed. She has borne nine calves, twins four times, and gives about 25 quarts of milk per diem.

Yours,

T. B. ROGERS, D.V.S.

ADDRESS

By CHARLES B. MICHENER, D.V.S.,

Before the Second Regular Annual Meeting of the American Veterinary College Alumni Association.

GENTLEMEN:—To have been chosen to present the *very first* paper before this body, is a privilege which I fully appreciate, but had this choice fallen upon some one of our members more competent than myself to fulfill the appointment, it would have been more in keeping with the importance of the occasion. The choice may, after all, prove a happy one, as it will be a source of just pride for an alumnus of this institution in a quarter of a century from now to look back and notice the disparity existing between this and an alumnus' essay of that period.

I trust that you will excuse me for not taking up some abstruse veterinary study as the subject of this paper, and bear with me while I notice, very briefly, the objects of this Association. We meet here, not socially alone, but for mutual improvement and the advancement of the science of veterinary medicine, and these questions are very apropos: 1st. Who are we? and 2d. How come we to exist as a body? I think that I can say without egotism that we are the first intelligent Veterinary Alumni Association of the United States. We owe our existence to the American Veterinary College; and springing from that institution it may be well to inquire into the reasons which gave it birth.

Not very far back in the history of this country, a demand

was recognized which at that time was not supplied. This demand became imperative, and as a result, the New York College of Veterinary Surgeons was founded, a charter secured, and regular sessions for the teaching of veterinary science were instituted and conducted. You all know the history of that institution from its birth to the present. You have all seen and appreciated the causes which operated to make the incorporation of the American Veterinary College in 1875 a *necessity*.

The restraints which were endeavored to be put upon the faculty while they constituted the N. Y. C. of V. S., have reacted entirely to the benefit of the student, and have given to us an alma mater of which we are *justly* proud. Our professors in the different departments are men who do not allow self and pecuniariness to deter them from doing all in their power to make the American Veterinary College the peer of any college in the old world.

There is one man (and I speak of him, not out of any disregard to the other members of the faculty) whose untiring zeal, perseverance, industry and self-sacrifice commends to every student of veterinary medicine a lasting appreciation and hearty co-operation. I need not mention the name of this *teacher*, this *gentleman*, this *friend*. You, who, like myself, have come to know him, know how great he is in his devotion to veterinary science. Starting then as the graduates of an honorable and well appointed veterinary college, it behooves us to use every endeavor that by assiduous study and careful investigations we may secure for ourselves and our profession, a scientific standing worthy the full recognition which a calling so preeminently important and humane deserves. The future is freighted with victories, and replete with facts for those of us who go forth to work. To *progress* is a law of nature, and for any to still stand, (which is synonymous with retrogression) is fatal to us as individuals, and derogatory to the veterinary profession. There are certain relations existing among members of this Association which should ever be held sacred. We owe it to the profession that our positions in life, our investigations, our opinions should *only* be actuated and obtained by motives which strive after TRUTH. Petty rivalry,

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personal aggrandizement must give way to those feelings which make every new fact, every advancement, the common property of the profession, upon which altar shall be laid for future, as well as the present generations, the first fruits of our lives.

To conclude, gentlemen, as a body, and as individuals, let us ever refuse to bury our honor, our integrity, our manhood by descending to the level of those who have earned the opprobrium of *quacks in the ranks of the profession.*

A NEW ATOMIZER.

A few months ago we called the attention of our readers to an apparatus invented by Dr. J. De Beer, of Boston, for the application of steam in fumigation of local parts, the extremities, the head, and even of general vapor bath, showing, therefore, how advantageous this little application was.

To-day we take pleasure in saying a word of another invention of Dr. De Beer, for the antiseptic dressing of wounds.

This atomizer is very simple, and so arranged that a powerful spray of antiseptic vapor can be used, and lasts two or three hours.

In the dressing of large wounds, or of injuries of the foot, which generally require some length of time to be *properly* applied, the veterinarian who is desirous to employ the antiseptic dressing, will find this a most useful instrument.

EXCHANGES, ETC., RECEIVED.

HOME EXCHANGES.—American Agriculturist, Scientific Farmer, Scientific American, Medical Record, Country Gentleman, Turf, Field and Farm, New York Rural, Prairie Farmer, Practical Farmer, Ohio Farmer, Maine Farmer, National Live

Stock Journal, Western Farm and Live Stock Journal, Index Medicus, Medical and Surgical Reporter, The Farm Journal, The American Farmer, The Proceedings of the Medical Society of the County of Kings.

FOREIGN EXCHANGES.—Revue fur Thierheilkunde und Thierzucht, Tidesskrift for Veterinarer, Journal de l'Agriculture, Veterinarian, Veterinary Journal, Recueil de Medecine Veterinaire, Archives Veterinaires, Mouvement Medical, Clinica Veterinaria, Gazette Medicale.

NEWSPAPERS.—Western Sportsman, Western Agriculturist, Our Dumb Animals, Vermont Record, The Ploughman, New England Farmer, The Leader (Canada), The Farmer's Review, The Nation, The Gazette (Canada), The Inter-Ocean (Chicago), The Item (Philadelphia).

COMMUNICATIONS.—Geo. Fleming, F.R.C.V.S.; Rob. Wood, V.S.; F. S. Billings, V.M.; A. A. Holcombe, D.V.S.; C. B. Michener, D.V.S.; T. B. Rogers, D.V.S.